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The Impact Of Cbt On Depression In Mothers Of Children With Neurodevelopmental Disorder

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Abstract

The present study aimed to explore the efficacy of Cognitive Behavioral interventions for the elimination of depression in mothers of children with autism spectrum disorder in individual setting. Total of 24 mothers were selected for the study. It was hypothesized that mothers of children with neurodevelopmental disorders who receive CBT intervention will experience fewer or no depressive symptoms compared to mothers of control group and mothers having borderline level of clinical depression will exhibit no depressive symptoms after CBT intervention, compared to mothers having moderate level of depression. Participants were divided into two groups with 12 participants in experimental and 12 in control group. Total of twelve therapy sessions were conducted by following Cognitive Behavioral Therapy (CBT). The pretest and posttest were done by filling in Beck Depression Inventory scale (Urdu Version) and a semi-structured interview form including demographic information and other relevant information were used. To see the effect of Cognitive Behavioral Therapy on the elimination of depression on mothers, Independent Sample T-test was applied. The results t = -6.853 indicate that there is statistically significant difference between both groups. Pretest and posttest results of Experimental group were compared by using Paired sample T-test. The results indicates that there is a strong difference between paired scores with t = 8.926.

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INTRODUCTION

A neurodevelopmental disorder (NDD) is a condition that arises during the developmental period typically early in life and affects the growth and development of the brain or central nervous system. Their severity can vary widely from mild impairments that enable individuals to lead relatively typical lives to more severe forms that necessitate lifelong support and care (NHS, 2025). In the DSM-5, neurodevelopmental disorders (NDDs) are described as a group of conditions that begin during the developmental period and are characterized by deficits that lead to impairments in functioning. This category includes intellectual disability (ID), communication disorders, autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), neurodevelopmental motor disorders such as tic disorders, and specific learning disorders (Deborah & Marc-Antoine, 2020).

Autism spectrum disorder is a neurological and developmental disorder that affects how people interact with others, communicate, learn, and behave. Although autism can be diagnosed at any age, it is described as a "developmental disorder" because symptoms generally appear in the first two years of life. Scientists believe there are multiple causes of ASD that act together to change the most common ways people develop. The term "spectrum" refers to the wide range of symptoms, skills, and levels of impairment that people with ASD can have. ASD affects people of every race, ethnic group, and socioeconomic background. It is four times more common among boys than among girls. The prevalence of ASD has increased markedly in recent decades. Data from 2016 indicate a prevalence rate of approximately 20 per 1,000 children aged 8 years, nearly tripling the rates reported in 2000 and 2002. This upward trend has been attributed to a combination of factors, including broader diagnostic criteria, increased public and clinical awareness, and advances in genetic research. The growing prevalence of ASD underscores its emergence as a critical public health concern, particularly given the substantial psychosocial and economic burdens it places on families and caregivers. Research indicates that parents of children with autism spectrum disorder (ASD) frequently experience elevated levels of stress, anxiety, fatigue, and depression. These psychological burdens are often linked to the demands of caregiving, difficulties in accessing adequate support services, and the impact of social stigma. Such stress not only affects parental health and overall well-being but can also compromise their capacity to provide optimal care for their child. The distinct challenges faced by these caregivers underscore the necessity for targeted professional

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support and highlight the importance of acknowledging both the prevalence of ASD and its profound effects on families in order to address caregivers' needs effectively.

Parenting a child diagnosed with autism spectrum disorder (ASD) presents distinct psychological and emotional challenges for both mothers and fathers, underscoring the multifaceted nature of family dynamics in this context. Mothers, who frequently serve as the primary caregivers, are particularly vulnerable to elevated stress levels due to the intensive demands of daily caregiving, compounded by the need to balance professional obligations with familial responsibilities. The presence of a robust social support network has been shown to play a pivotal role in alleviating these stressors, as it enhances parents' ability to manage caregiving responsibilities effectively. Supportive environments characterized by empathy and understanding are especially beneficial for mothers, facilitating the adoption of adaptive coping strategies. Conversely, in the absence of adequate support, families may encounter difficulties in maintaining marital and familial cohesion, which can lead to reliance on maladaptive coping mechanisms such as emotional withdrawal or avoidance. Research further indicates that a more equitable distribution of caregiving responsibilities between parents contributes to improved emotional resilience, enhanced interpersonal relationships, and stronger problem-solving capabilities, thereby promoting overall family well-being.

In a study addressing the limited body of literature within the Italian context, Luana et al. (2021) examined the well-being of parents raising children with ASD. The research specifically explored the influence of individual psychological variables—namely, optimism, self-esteem, perceived well-being, and hopelessness—on parents' subjective quality of life (QoL). The authors hypothesized that, relative to parents of typically developing children, those caring for children with ASD would exhibit lower levels of optimism, self-esteem, and perceived well-being, as well as higher levels of hopelessness. The results supported these hypotheses, with regression analysis identifying optimism and the PERMA model dimensions of accomplishment and happiness as significant positive predictors of QoL, while hopelessness emerged as a significant negative predictor. These findings underscore the critical role of fostering positive psychological traits in enhancing parental well-being.

Complementary findings have been reported in other studies, emphasizing the enduring psychological toll faced by mothers of children with ASD. For example, Alice et al. (2009)

observed that many mothers experience significant difficulty adapting to the sustained emotional and practical challenges associated with caregiving, frequently exhibiting elevated levels of depressive symptoms. This limited capacity for adaptation signals the urgent need for early, targeted interventions that focus on supporting maternal mental health. Providing such support not only mitigates psychological distress but also enhances the quality of caregiving, which is vital for promoting favorable developmental outcomes in children with ASD. These insights highlight the necessity of accessible, comprehensive mental health services and structured support interventions aimed at bolstering resilience among mothers in caregiving roles.

In addition to depression, fatigue has emerged as a critical yet under recognized factor affecting parental well-being. Rebecca et al. (2013) conducted a study involving 50 mothers of children aged 2 to 5 years with ASD and found that this group reported significantly higher levels of fatigue compared to mothers of typically developing children. The reported fatigue levels were within the moderate range and were associated with poor sleep quality, a pronounced need for social support, and insufficient physical activity. Importantly, fatigue was found to be significantly correlated with increased symptoms of stress, anxiety, and depression, as well as diminished parental satisfaction and self-efficacy. These findings emphasize the need for interventions that directly address caregiver fatigue, which may contribute to both short- and long-term improvements in overall family functioning and caregiver mental health. Study in Egypt by Enas Mahrous Abdelaziz & etal said that CBT with problem-solving improved caregiver well-being. They also found the reduced scores in depression, stress and anxiety scale and increased coping skills.

Extending beyond ASD, the psychological burden borne by mothers of children with neurodevelopmental disorders (NDD) more broadly has also been well documented. Nousheen et al. (2021) identified high prevalence rates of depressive and anxiety symptoms among mothers of children with NDD, underscoring the necessity of integrating mental health screening and tailored counseling services into caregiver support programs. Early identification and timely psychological intervention can significantly improve maternal mental health and foster a more supportive caregiving environment, thereby contributing to more positive developmental outcomes for children with NDD.

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According to the World Health Organization (WHO), depression is a common mental disorder characterized by persistent sadness and a loss of interest or pleasure in activities that were once enjoyable. Cognitive Behavioral Therapy (CBT) has long been recognized as an effective treatment for depression. However, when examining its impact on parents of children with neurodevelopmental disorders (NDDs), several unique factors come into play. These parents experience elevated stress due to the demands of caring for a child with a chronic condition, often leading to higher rates of depression, anxiety, and burnout.

While CBT appears to be a promising intervention for reducing depression in parents of children with NDDs, the complexity of their challenges calls for a more nuanced approach. Parental depression in this context is influenced not only by individual cognitive patterns but also by external stressors and systemic factors.

Cognitive Behavioral Therapy (CBT) has emerged as a well-established, evidence-based approach for addressing psychological distress among parents of children with autism spectrum disorder (ASD). Given the elevated levels of stress, anxiety, and depressive symptoms commonly reported by these caregivers, particularly mothers, interventions that enhance coping and problem-solving skills are crucial in promoting psychological resilience and family well-being. Lunsky, Y., et al. (2017) did randomized controlled trial of cognitive behavior therapy for mothers of children with autism spectrum disorder. Their results demonstrated that CBT reduced anxiety and depression in mothers of autistic children.

Recent research has demonstrated that the integration of problem-solving appraisal training into CBT protocols can further augment the therapeutic impact of CBT by improving caregivers' abilities to manage daily stressors effectively. In a randomized controlled trial conducted in Egypt, a culturally adapted CBT program was implemented with a focus on enhancing problem-solving skills among mothers of children with ASD. Sixty participants were assigned to either an intervention or control group in a 1:1 ratio. Over a three-month period (October 2022 to April 2023), the intervention group received structured CBT sessions that included training in identifying and resolving caregiving-related challenges. Assessments administered before and after the intervention included socio-demographic data, the Depression Anxiety Stress Scale (DASS-21), and the Problem-Solving Inventory (PSI). The results indicated significant reductions in depression, anxiety, and general psychological distress among mothers in the CBT group compared to those in

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the control group ($p < .05$). Furthermore, participants exhibited marked improvements in problem-solving confidence, adaptive coping style, and perceived personal control ($p < .05$). These findings underscore the effectiveness of problem-solving-enhanced CBT in reducing caregiver burden and improving psychological well-being. Importantly, the culturally sensitive nature of the intervention also supports its cross-cultural relevance, highlighting its potential for broader application in diverse settings.

Together, these findings provide compelling support for the implementation of CBT-based interventions tailored to the unique needs of caregivers and families of children with ASD. CBT proves to be a versatile and effective modality. These studies further highlight the importance of equipping parents with practical, evidence-based tools that not only support their own mental health but also promote more favorable outcomes for their children.

Following hypotheses were formulated after literature review.

1- Mothers of children with neurodevelopmental disorders who receive CBT intervention will experience fewer or no depressive symptoms compared to mothers who do not receive any therapeutic intervention.

2- Mothers having borderline level of clinical depression will exhibit no depressive symptoms after CBT intervention, compared to mothers having moderate level of depression.

METHODOLOGY

Sample

The current study was a quantitative research and convenience sampling method was used to gather the data. The sample was comprised of 24 female participants. The mothers of neurodevelopmental disorder of age between 25- 35 having borderline to moderate level of clinical depression participated in the study. Participants were recruited from Transformation International Wellness Clinics, Karachi, Pakistan, and randomly assigned to the experimental (*n* = 12) or control (*n* = 12) group.

The measures used in this study were as follow:

- Informed Consent form,
- Demographic Information form,
- Back Depression Inventory

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- "Treatment Manual for Cognitive Behavioral Therapy for Depression" by Jeannette Rosselló, Ph.D. Guillermo Bernal, Ph.D. University Center for Psychological Services and Research University of Puerto Rico, Río Piedras 2007

The informed consent was an agreement between researcher and participants in which they were informed regarding the purpose of the research. The demographic information sheet was filled by the participants to get the information that helped the researcher to know about the sample of the study. It inquired about the participant's, age, education, family structure, socio economic status, diagnosis of child along with medical details of mother.

Beck Depression Inventory

The Beck Depression Inventory (BDI) was developed in 1961 by Aaron T. Beck and his colleagues. It's a 21-item, self-report questionnaire designed to measure the severity of depression with Cronbach's alpha typically of 0.85, indicating high internal consistency (Ambrosini PJ et al 1991). The score is simply added.

Procedure

The sample was approached personally and through contacts. Convenience sampling was used to collect data and conduct individual therapy sessions on mothers of Karachi, Pakistan. In the form, participant's provided demographic details after reading the consent form and filled Beck Depression Inventory (Urdu version). Aftab Alam Khan and et al (2015) used Urdu version of Beck Depression Inventory on general population of Pakistan. They found that it has good psychometric properties followed by its administration; thus they suggested the scale could be effectively used for assessing depression in Pakistan. Therefore, in this study the Urdu version of BDI was used. The participants were divided into two groups, experimental group (on which CBT was applied) and control group. Both the sample filled the BDI form again 3 months to check the impact of CBT on depression. After that scores were calculated as per each scale's calculation provided by the developer of the scale than the data as statistically analyzed. The results of sample were analyzed through Independent Sample t-Test on the Statistical Package for the Social Sciences (SPSS) software version 21.

The twelve sessions were divided into three modules or parts:

- How your thoughts affect your mood. (4 sessions)
- How your actions affect your mood. (4 sessions)

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- How your relationships affect your mood. (4 sessions)

Sessions Plan

Session	Focus	Key Components
1–4	Cognitive Restructuring	Cognitive triad, mood-thermometer, identifying/reframing negative thoughts
5–8	Behavioral Activation	Pleasant activity scheduling, obstacle management
9–12	Interpersonal Effectiveness	Social support mapping, communication skills

Sessions Details

SESSION: 1

Aim	HOW THOUGHTS AFFECT MOOD Present the purpose of session. Today's session has several goals: Get to know each other better Discuss the rules for the sessions Learn what depression is Learn how your thoughts affect the way you feel
Intervention	Discussed in session: Cognitive triad Introduce the concept of how our thoughts affect our mood (how we feel) Explain the purpose of therapy Homework: Mood Thermometer
Outcome	
Client 2, 3, 4, 6, 9, 10, 11, 12	Clients easily learned the purpose of sessions and concepts of depression, thoughts, feelings and behaviors and their connection. They also easily

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	understood the concept of mood thermometer.
Client 1, 5, 7 and 8	Clients easily learned the purpose of sessions however that had slight difficulty in understanding the concepts of depression, thoughts, feelings and behaviors and their connection. Whereas they easily understood the concept of mood thermometer.

SESSION: 2

Aim	HOW THOUGHTS AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 1 Depression Cognitive Behavioral therapy for depression Mood Thermometer: How did you feel completing it each day? Any surprises? Reinforce the important of completing the Mood Thermometer as a way to see how mood fluctuates
Intervention	Discussed in session: What are thoughts? Your thoughts affect your mood (how you feel) How do people with depression think? How do people who are not depressed think? Introduction to different types of thoughts Learning to identify different types of harmful or counterproductive thoughts Homework: Mood Thermometer
Outcome	
Client 1, 2, 3,4,6,7,9, 12	Clients had insight how people having depression thinks. They had insight of types of thoughts
Client 5,8, 10, 11	Clients had challenges in having insight how people having depression thinks. They had insight of types of thoughts

SESSION: 3

Aim	USING THOUGHTS TO CHANGE MOOD

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	Review or summarize briefly the following concepts discussed in Session 2 Mood Thermometer Types of thoughts people who are depressed have. List of positive and negative thoughts what are some of the thoughts they had this past week.
Intervention	Discussed in session: Increasing thoughts that improve your mood Decreasing thoughts that make us feel bad Homework: Mood Thermometer List of positive and negative thoughts Practice some of the strategies discussed to increase positive thoughts and decrease negative ones
Outcome	
Client 1,2,3,4, 6, 8,9,10	Clients had insight how thoughts effects mood and they were able to identify their thoughts.
Client 5, 7, 11,12	Clients had challenge in insight how thoughts effects mood and they had difficulty in identifying their thoughts.

SESSION: 4

Aim	HOW THOUGHTS AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 3 Mood thermometer List of positive and negative thoughts - What are some of the thoughts they had last week? What strategies they used to increase positive thoughts and decrease negative ones?
Intervention	Discussed in session: Debating/disputing your negative thoughts – the a-b-c-d method Exercises with the ABCD method Some thoughts that can contribute to feeling depressed

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	Homework: Mood thermometer List of positive and negative thoughts Use the A-B-C-D method to debate or challenge their negative thoughts.
Outcome	
Client 3, 4, 7, 8, 10	Clients easily listed their thoughts and they were able to change the thoughts
Client 1, 2, 5, 6, 9, 11, 12	Clients had difficulty listing their thoughts thus they had challenges in changing the thoughts

SESSION: 5

Aim	HOW ACTIVITIES AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 4 Mood Thermometer List of Positive and Negative Thoughts The A-B-C-D Method
Intervention	Discussed in session: The activities that we do affect our mood: through our activities we can tell how we feel. Pleasant activities do not have to be special activities List of pleasant activities Sometimes obstacles get in the way of our doing certain pleasant activities. Homework: Mood Thermometer At the end of each day, mark each of the activities on the List of Pleasant Activities that they did that day.
Outcome	
Client 1, 2, 3, 4, 6, 8, 9	They made the list of activities that can help them.
Client 5, 7, 10, 11, 12	They had challenges in making list of activities that can help them.

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SESSION: 6

Aim	HOW ACTIVITIES AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 5*:* Mood Thermometer List of Pleasant Activities
Intervention	Discussed in session: More information on pleasant activities. Made a list of pleasant activities that the they can do that do not cost lot. Homework: Mood Thermometer At the end of each day, mark each of the activities on the List of Pleasant Activities Weekly Activities Schedule.
Outcome	
Client 1,2,3,4, 6, 8,9,10	They made the list of activities that helped them.
Client 5, 7, 11,12	They had challenges in making list of activities that helped and that did not help them.

SESSION: 7

Aim	HOW ACTIVITIES AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 6 • Mood Thermometer • List of Pleasant Activities • Weekly Activities Schedule
Intervention	Discussed in session: Creating plan for overcoming depression by short term, long term and lifetime goals. Identifying obstacles that prevent from achieving goals. To help overcome depression:

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	Homework: Mood Thermometer Weekly Activities Schedule Time management: Make a list of the goals client would like to achieve short term, long term and lifetime goals.
Outcome	
Client 1, 2, 3, 4, 6, 7, 8, 9, 10, 11	They discussed routine in detail after which their daily routine was managed.
Client 5, 12	Daily routine was managed after reviewing their life style in detail. Their challenges and strengths were discussed in detail.

SESSION: 8

Aim	HOW ACTIVITIES AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 7 • Mood Thermometer • Weekly Activities Schedule • List of personal goals
Intervention	Discussed in session: Depression and the healthy management of reality Homework: Mood Thermometer Weekly Activities Schedule
Outcome	
Client 1, 2, 3, 4, 6, 8, 9	They easily made long term and short-term goals.
Client 5, 7, 10, 11, 12	They had challenges in making long term and short-term goals.

SESSION: 9

Aim	**HOW RELATIONSHIPS AFFECT MOOD**

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	Review or summarize briefly the following concepts discussed in Session 8 • Mood Thermometer • Weekly Activities Schedule • Review how we understand depression according to CBT
Intervention	Discussed in session: Work with how clients contact with other people affects The importance of social support Homework: Mood Thermometer
Outcome	
Client 1,2,3,4,6, 8, 9, 10	They were able to easily relate their mood with relationships with family and friends.
Client 5, 7, 11,12	They has challenges in understanding and developing insight how their mood effect relationships with family and friends.

SESSION: 10

Aim	HOW RELATIONSHIPS AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 9 • Mood Thermometer • Social support network and how to maintain and strengthen it
Intervention	Discussed in session: Explore how thoughts, actions and feelings influence relationships and how relationships affect these three areas. Homework: Mood Thermometer
Outcome	
Client 1, 2, 3, 4, 6, 7, 8, 9, 10, 11	They easily identified and listed social support

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Client 5, 12	They had challenges in identifying and listing social support

SESSION: 11

Aim	HOW RELATIONSHIPS AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 10 • Mood Thermometer • Improving relationships can help make feel better.
Intervention	Discussed in session: Examine the thoughts, feelings and actions in relation to a person with whom he/she has identified interpersonal difficulties. Work on Communication skills Home work: Mood thermometer Practice being assertive during this week. Pick a simple situation in which you can practice.
Outcome	
Client 1, 2, 3, 4, 6, 8, 9	Clients had good insight and learned effective communication skills easily
Client 5, 7, 10, 11, 12	These clients had challenges in having insight and learn effective communication skills.

SESSION: 12

Aim	HOW RELATIONSHIPS AFFECT MOOD Review or summarize briefly the following concepts discussed in Session 11 Mood Thermometer Assertiveness exercise
Intervention	Discussed in session: Increase social network How to establish and maintain healthy relationships: being assertive.
Outcome	
Client 1,2,3,4,6,7,8,	Clients reported decreased feelings of isolation and a greater sense of belonging and expressed increased willingness to seek help or share

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9, 10	experiences with peers.
Client 5, 11, 12	These clients has somewhat challenges in becoming more social as they are happy with having interaction with certain people.

Session Outcome Adherence:

- High Adherence: 75% of participants (e.g., Clients 1–4, 6, 8–10) demonstrated proficiency in CBT techniques (e.g., thought challenging, activity scheduling).
- Moderate Challenges: 25% (e.g., Clients 5, 7, 11–12) required additional reinforcement for skill acquisition.

RESULTS

Table 1:
T-test Results Comparing Pretest and Posttest Level of Depression
Females (N=12)

	M	SD	t	Df	p(two-tailed)	95% CI LL	UL
Pretest and Posttest Levels of Depression	9.417	3.655	8.926	11	0.000	7.095	11.739

Note: Cl= Confidence Interval, M= Mean, SD= Standard Deviation, t= t value, df= degree of freedom, p= significant value, LL=Lower Limit, UL=Upper Limit

Table 1 represents the difference of levels of depression between pretest and posttest after CBT intervention on mothers of NDD. Results indicate a statistical significant difference at $p < 0.05$ ($p = 0.00$).

Table 2:
T-test Results Comparing Level of Depression in Experimental and Control Groups
Females (N=24)

	p (two-

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	N	M	SD	t	df	tailed)
Control Group	12	22.00	4.178	-6.853	22	0.000
Experimental Group	12	12.33	2.535			

Note: Cl= Confidence Interval, M= Mean, SD= Standard Deviation, t= t value, df= degree of freedom, p= significant value, LL=Lower Limit, UL=Upper Limit

Table 2 represents the difference of levels of depression between control and experimental groups of mothers of NDD children after CBT intervention. Results indicate that a statistically significant difference at $p < 0.05$ ($p = 0.00$).

DISCUSSION

This study set out to evaluate the efficacy of Cognitive Behavioral Therapy (CBT) in alleviating depressive symptoms among mothers of children diagnosed with neurodevelopmental disorders (NDDs). The findings provide compelling support for the effectiveness of CBT in this population, revealing statistically significant reductions in depressive symptoms post-intervention compared to a control group. Additionally, the data highlight the moderating effect of baseline depression severity: mothers with borderline clinical depression responded more dramatically to CBT, often exhibiting no depressive symptoms post-intervention, whereas those with moderate depression also improved but retained residual symptoms. These results provide critical insights into how targeted mental health interventions can impact maternal well-being in high-stress caregiving environments.

The findings align with the established literature on CBT's efficacy in reducing depressive symptoms across diverse populations (Butler et al., 2006; Cuijpers et al., 2013). CBT is based on the cognitive model of depression, which posits that maladaptive thought patterns contribute to the development and maintenance of depressive symptoms (Beck, 1976). By identifying and restructuring these patterns, CBT equips individuals with healthier cognitive and behavioral strategies. For caregivers of children with NDDs, who often face chronic stress, uncertainty, and social isolation, these tools are particularly vital.

Past research has shown elevated levels of psychological distress among mothers of children with autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), and intellectual disabilities (Hayes & Watson, 2013; Singer, 2006). These mothers are at higher risk of developing mood disorders, which, if left untreated, can negatively affect their parenting efficacy, family

functioning, and the developmental outcomes of the child (Weiss et al., 2013). Thus, interventions targeting maternal depression are not merely beneficial for the mother but carry systemic implications for the child and family unit.

An important contribution of this study is the identification of differential treatment responses based on the severity of initial depressive symptoms. Mothers with borderline clinical depression experienced full remission following CBT, while those with moderate symptoms showed significant improvement. This suggests a possible dose-response relationship in the efficacy of CBT and supports the need for early intervention before depressive symptoms become entrenched.

These findings are consistent with prior work by Furukawa et al. (2017), who reported that the effectiveness of CBT may vary depending on the intensity of initial symptoms, with milder cases often demonstrating a faster and more complete recovery. Furthermore, DeRubeis et al. (2005) argued that while CBT is effective for severe depression, additional support (e.g., medication or longer therapy duration) may be necessary for sustained recovery. This implies that stepped-care models wherein the intensity of treatment is matched to symptom severity particularly beneficial in caregiver populations.

It is critical to situate these findings within the socio-cultural context in which the study was conducted. In many settings, especially low and middle income countries, mental health resources are limited, and caregivers of children with special needs often receive little psychosocial support (Rahman et al., 2008). Moreover, stigma surrounding both mental illness and developmental disabilities can exacerbate caregivers' isolation and psychological burden (Ali et al., 2012). CBT, particularly in its group-based or brief formats, offers a cost-effective, scalable intervention that could be integrated into community-based healthcare services.

Additionally, the study highlights the importance of tailoring CBT protocols to address the unique stressors faced by caregivers of children with NDDs. These stressors include frequent interactions with health and education systems, unpredictable child behaviors, and concerns about the child's future (Estes et al., 2009). Future research might explore the adaptation of CBT frameworks to include elements such as mindfulness, behavioral activation, and psychoeducation on disability to increase relevance and impact.

These findings carry significant implications for clinical practice and health policy. First, routine screening for depressive symptoms among mothers of children with NDDs should become standard practice in pediatric and developmental care settings. Second, CBT should be made accessible to this population, either through traditional mental health services or integrated into multidisciplinary developmental clinics. Given the evidence of differential responsiveness, clinicians should prioritize early intervention for those with subclinical or borderline depression to prevent progression to more severe mood disorders.

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At a policy level, these results support advocacy for caregiver support programs and underline the need for systemic investment in maternal mental health services as part of comprehensive care for children with developmental disabilities. Such integrative models have been shown to improve not only maternal mental health outcomes but also child developmental progress and overall family resilience (Osborne et al., 2008).

LIMITATION OF THE STUDY

While the results are encouraging, it is important to acknowledge certain limitations of the study. The sample was geographically, which may limit the generalizability of the findings. Future research should incorporate larger, more diverse samples and employ randomized controlled trial designs. Additionally, the study focused on short-term outcomes; the long-term sustainability of symptom reduction remains unknown. Follow-up assessments at six months or one year would provide valuable information on the durability of treatment effects. Another limitation lies in the lack of data on potential confounding variables such as social support, comorbid anxiety, or caregiver self-efficacy. These variables could mediate or moderate the treatment response and should be incorporated into future models.

RECOMMENDATIONS OF THE STUDY

The findings of this study have significant implications for clinical practice. The result suggests early intervention is critical to prevent symptom entrenchment. Incorporating CBT into routine care for mothers of children with neurodevelopmental disorders could mitigate the risk of developing more severe depressive episodes. Additionally, early identification and intervention for mothers exhibiting borderline depressive symptoms could prevent the escalation to moderate or severe depression, thereby enhancing maternal well-being and potentially improving child outcomes.

Building on the present findings, future research should explore the mechanisms through which CBT exerts its beneficial effects in caregiver populations. Are changes in cognitive distortions the key driver, or do factors like increased self-efficacy and problem-solving mediate outcomes? Moreover, comparing CBT with other therapeutic modalities such as Acceptance and Commitment Therapy (ACT), Interpersonal Therapy (IPT), or Mindfulness-Based Cognitive Therapy (MBCT) would help identify the most effective intervention for this group.

Digital delivery of CBT (e.g., via telehealth platforms) is another promising avenue, particularly given logistical barriers faced by caregivers. Preliminary studies suggest that internet-based CBT can be as effective as face-to-face therapy for mild to moderate depression (Andersson et al., 2014).

CLINICAL AND POLICY IMPLICATIONS

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Implementing routine screening for maternal depression in pediatric and neurodevelopmental disorder (NDD) clinics is crucial because untreated maternal mental health conditions can negatively impact both the mother's well-being and the child's developmental, behavioral, and therapeutic outcomes. Early identification through standardized screening tools (e.g., PHQ-9) during routine pediatric visits allows for timely intervention, breaking the cycle of intergenerational mental health risks. Equally important is integrating accessible cognitive behavioral therapy (CBT) into multidisciplinary care and community services, as it equips mothers with practical coping strategies to manage stress, anxiety, and depression—particularly vital for caregivers of children with NDDs who face heightened emotional and logistical challenges. Embedding CBT within pediatric/NDD clinics (via telehealth, or group sessions) and expanding community-based programs ensures that mental health support is convenient, destigmatized, and sustainable. Policy measures—such as mandating depression screening, reimbursing integrated mental health services, and training providers—are essential to make these interventions scalable and equitable. By prioritizing these strategies, healthcare systems can foster healthier families, improve treatment adherence, and reduce long-term societal costs associated with untreated maternal depression

CONCLUSION

This study affirms the therapeutic value of Cognitive Behavioral Therapy in reducing depressive symptoms among mothers of children with neurodevelopmental disorders. The differential effectiveness based on baseline depression severity highlights the importance of early intervention and the need for individualized treatment approaches. As maternal well-being plays a central role in the development and functioning of children with disabilities, integrating CBT into caregiver support programs could yield multidimensional benefits. Expanding access to such interventions should be a priority for clinicians, policymakers, and mental health advocates alike.

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